MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2015/2016

EME3186 – ERGONOMICS AND HUMAN FACTORS

(ME / BE)

1 JUNE 2016
2.30 P.M - 4.30 P.M
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question Paper consists of 6 (SIX) pages including the cover page.
2. There are 4 (FOUR) Questions in total. Attempt ALL **FOUR** questions.
3. All questions carry equal marks and the distribution of marks for each question is given in the Question Paper.
4. Write all your answers in the Answer Booklet provided.

Question 1

a) Define ergonomics and explain its importance to society.

[5 marks]

b) Figure Q1 shows a manual worker handling some goods in an awkward posture. This worker experiences possible pain and stress at several parts of his body. Identify and explain the possible areas of stress experienced by his body as a result of this awkward posture. Illustrate (with a suitable sketch) and explain an appropriate posture that the worker should assume. You are allowed to create your own assumptions in your sketches or redesigns as long as they are reasonable, logical and based on ergonomics aspects.

[20 marks]

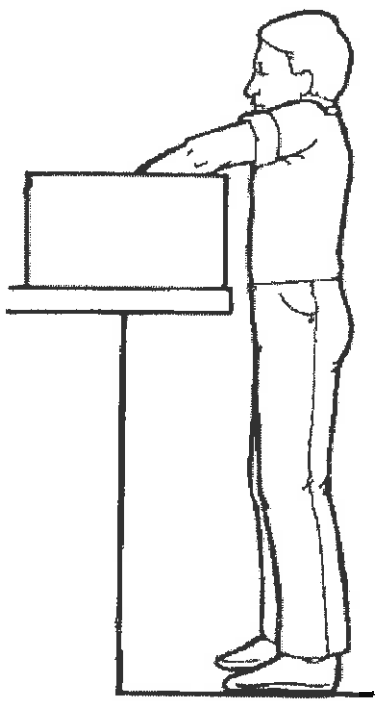

Figure Q1

Continued...

Question 2

a) A sound would be deemed undesirable to a person depending on a number of factors. List these factors down.

[5 marks]

b) Higher levels of job satisfaction are associated with higher levels of satisfaction with the workplace environment. Sketch a model which represents the relationships between environmental and job satisfaction.

[6 marks]

c) Climate change can severely affect humans and their interaction with the environment. Not only posing significant risks for Earth's natural systems, the effects of global warming on humans have only recently begun receiving the expanded attention they critically require. In your opinion, describe and justify the key risks related to the effects of global warming on humans.

[14 marks]

Continued...

Question 3

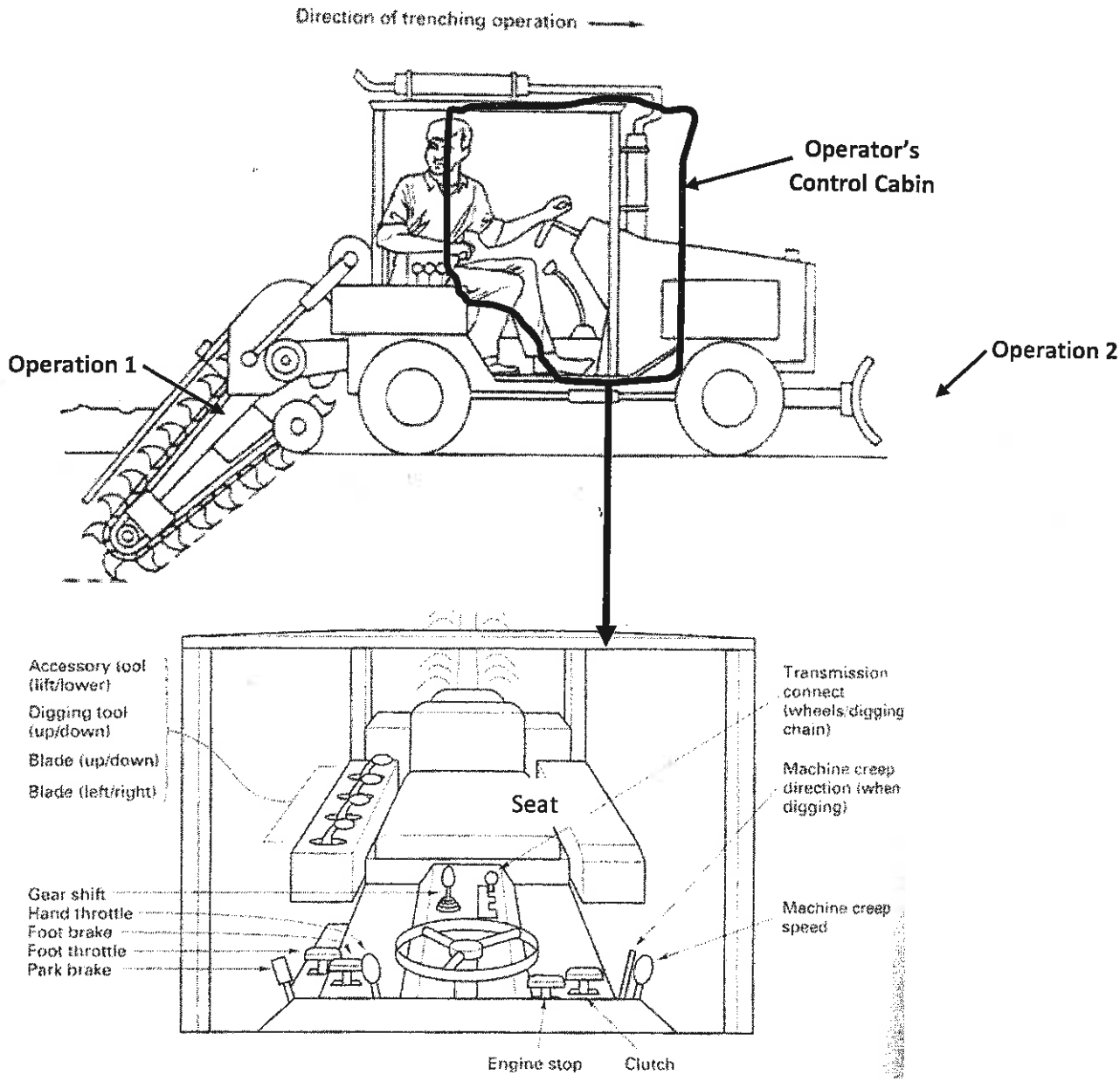

Figure Q3

a) Figure 3 shows a trenching vehicle and its control cabin. By analysing the figure, state how you can improve the control panel design and the operator's work posture based on your ergonomic knowledge.
(Note: You may support your answer with neat drawings and sketches)

[10 Marks]

Continued...

b) As an ergonomic consultant, state the characteristics of a person's neutral posture when dealing with computers.

[5 Marks]

c) Proper arrangement of controls and displays to enhance work sensation involves the ergonomic knowledge of '***compatibility principles***'. In your own words, state the types of '***compatibility principles***'. Give examples for each of the '***compatibility principles***' stated.

[10 Marks]

Continued...

Question 4

a) Due to an expansion expected by Nirnami Engineering Works Sdn. Bhd., the company is in the midst of designing a staff office layout to meet the following management preferences:

- *Workplaces to be arranged in groups*
- *Computer, printer, projector, telephone and fax machine to be placed in the room*
- *Flexibility with changing team composition*
- *Shared archive access through a Local Area Network*
- *Interdisciplinary team work and face to face communication is highly needed*

Show using an x-y coordinate system the main office concepts and clearly indicate which one would meet the management preference above. Give reasons for your choice.

[10 marks]

b) Based on your office setup selection in Question 4 part (a), illustrate by means of a neat sketch the type of illumination you will select.

[3 Marks]

c) What are the key factors that contribute to 'Sick-Building-Syndrome'? In your own words, state the impact of 'Sick-Building-Syndrome' to human beings.

[12 Marks]

End of paper